REMARKS

Applicant appreciates the Examiner's thorough consideration provided the present application. Claims 1-9 are now present in the application. Claim 1 has been amended. Claim 1 is independent. Reconsideration of this application, as amended, is respectfully requested.

Claim Rejections Under 35 U.S.C. § 102

Claims 1-9 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Shabtay, U.S. Patent No. 6,895,441. This rejection is respectfully traversed.

In light of the foregoing amendments, Applicant respectfully submits that this rejection has been obviated and/or rendered moot. As the Examiner will note, independent claim 1 has been amended to recite a combination of steps including "establishing a backup LSP with no bandwidth reservation; checking that a label switching path (LSP) breaks down; redirecting the LSP to the backup LSP with no bandwidth reservation; rearranging to obtain an auxiliary backup LSP according to the current resource distribution in the MPLS network; checking if the broken LSP is recovered; and restoring the LSP." Applicant respectfully submits that the above combinations of steps as set forth in amended independent claim 1 is not disclosed nor suggested by the reference relied on by the Examiner.

As disclosed on page 3, lines 3-11 of the specification, some pre-built re-routing mechanisms only consider the situation of a single protected LSP, but there are over hundreds of LSP's on a single link. Moreover, a bandwidth has to be reserved for the backup LSP. Therefore, the bandwidth utilization is not optimized. When a link has a problem, the backup LSP may also not good enough because it is already a congestion link. On the other hand, dynamically building

a backup LSP after a problem happens may result in long service interrupted time or failure in backup LSP building. As disclosed in the U.S. Patent Application Publication No. US 2002/0060985, the backup LSP is also built beforehand. Therefore, the utilization of the resources is low and the backup LSP may not be the best one after the link broken down.

The present invention provides a method to *establish a backup LSP without bandwidth reservation before breaking.* Once the corresponding label switching path (LSP) breaks down, *the packets thereon are redirected to the backup LSP so that the network service is not interrupted.* At the same time, if the network is not fixed after a predetermined failure time (Tfail), an Ingress router *rearranges an auxiliary backup LSP according to the network resources at that moment.* This will increase the bandwidth utilization and lower the overhead thereon, achieving the goal of optimizing the backup LSP. After the breakdown is over, the method checks that the available time is greater than a predetermined available time (Tavailable). Then it rearranges the available paths so that the restored state is also optimized. Tfail and Tavailable are used to avoid repeated switching within a short period so that the router does not need to continuously rearrange and switch LSP's.

Shabtay in col. 11, lines 56-59 discloses that the available bandwidth values used by the LSP initiating node in its route search accurately represent the amount of bandwidth available on that link. However, as recited in claim 1, the backup LSP is *established before the link breaks down*, and the backup LSP is *with no bandwidth reservation.* Hence, the packets thereon can be redirected to the backup LSP for the first time, so that the network service is not interrupted. Shabtay nowhere discloses those claimed features.

Shabtay in col. 4, lines 4-13 further discloses:

> The path reroute mechanism comprises performing multiple searches for a route when a LSP is to be rerouted. Each search is performed on a different type of previously allocated link bandwidth. In the example embodiment presented herein, three different bandwidth types are defined including: bandwidth reserved for protection purposes, bandwidth reserved for protected paths (i.e. protected LSPs, LSPs that will be rerouted to the protection tunnel upon link failure) and bandwidth reserved for unprotected paths (i.e. unprotected LSPs).

In other words, the above disclosure simply discloses three ways to reroute when the link breaks. It may need a long time to search the new LSP. Unlike Shabtay, in the claimed invention, a backup LSP is established without bandwidth reservation before breaking. Once the corresponding label switching path (LSP) breaks down, the packets thereon are redirected to the backup LSP so that the network service is not interrupted. At the same time, if the network is not fixed after a predetermined failure time (Tfail), an Ingress router rearranges an auxiliary backup LSP according to the network resources at that moment. This will increase the bandwidth utilization and lower the overhead thereon, achieving the goal of optimizing the backup LSP. Therefore, *the claimed invention can prevent the service of the MPLS from being unavailable when the MPLS breaks down and optimizes the utilization of the MPLS resources.* Those features are clearly absent from Shabtay.

Since Shabtay fails to teach each and every limitation of amended independent claim 1, Applicant respectfully submits that claim 1 and its dependent claims clearly define over the teachings of Shabtay. Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 102 are respectfully requested.

CONCLUSION

Since the remaining patents cited by the Examiner have not been utilized to reject the claims, but merely to show the state of the prior art, no further comments are necessary with respect thereto.

It is believed that a full and complete response has been made to the Office Action, and that as such, the Examiner is respectfully requested to send the application to Issue.

In the event there are any matters remaining in this application, the Examiner is invited to contact Joe McKinney Muncy, Registration No. 32,334 at (703) 205-8000 in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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